

SECTION 15146
STAINLESS STEEL PIPING SYSTEMS
(NON-CERTIFIED MATERIALS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

- A. This Section includes Stainless Steel piping systems for moderate services with 32°F (0 °C) to 180°F (50°C) maximum temperature range and 150-psig maximum pressure for the Target Building basement processes. These systems are as follows:
1. Secondary Confinement Chilled Water system.
 2. Secondary Confinement Sensible Chilled Water system.
 3. Compressed Air (Plant air) system.
 4. Fire Protection (FP) water system.
 5. As additional systems as they called out on drawings.
- B. Related Sections, if applicable:
1. Division 15, Section 15050, Piping Systems.
 2. Division 15, Section 15072, Cleaning.
 3. Division 15, Section 15073, Pressure/Leak Testing.
 4. Division 15, Section 15074, Identification and Labeling.
 5. Division 15, Section 15075, Disinfection.
 6. Division 15, Section 15100, Valves.
 7. Division 18, Section 18100, General Welding Requirements.

1.3 REFERENCES

- A. American National Standards Institute (ANSI).
1. ANSI B16.5-96, "Pipe Flanges and Flanged Fittings, Addenda B16.5A-92".
 2. ANSI B16.9-93, "Factory-Made Wrought Steel Butt-welding Fittings".
 3. ANSI B16.21-92, "Nonmetallic Flat Gaskets for Pipe Flanges".
- B. American Society of Mechanical Engineers (ASME).
1. ASME B31.3-96, "Process Piping".
- C. American Society for Testing and Materials (ASTM).
1. ASTM A182-96, "Standard Specification for Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service".
 2. ASTM A193-96b, "Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service".
 3. ASTM A194-96, "Standard Specification for Carbon and Alloy-Steel Nuts and Bolts for High Pressure and High Temperature Service".
 4. ASTM A262-93a, "Standard Practices for Detecting Susceptibility to Inter-granular Attack in Austenitic Stainless Steels".
 5. ASTM A312-95, "Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes".
 6. ASTM A358-95a, "Standard Specification for Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High-Temperature Service".
 7. ASTM A403-96, "Standard Specification for Wrought Austenitic Stainless Steel Piping".

Fittings”.

8. ASTM D4894-94, “Standard Specification for Poly-Tetra-Fluoro-Ethylene (PTFE) Granular Molding and Ram Extrusion Materials”.

PART 2 PRODUCTS

2.1 MATERIALS: Unless otherwise indicated, for chilled water, heating hot water, compressed (plant) air and Fire-protection water services select materials as follows:

- A. Pipe: AISI Type 304L Stainless Steel, ASTM A312 or ASTM A358 Class 4, seamless or welded, Schedule 40S.
- B. Pipe sleeves: AISI Type 304L Stainless Steel, ASTM A312 or ASTM A358 Class 4, seamless or welded, Schedule 40S.
- C. Fittings: AISI Type 304L Stainless Steel, ASTM A403 Grade WP-S304L or Grade WP-W304L, butt weld, Schedule 40S, ANSI B16.9.
- D. Flanges: AISI Type 304L Stainless Steel, ASTM A182 Grade F 304L, slip-on or weld neck, ANSI B16.5 Class 150.
- E. Gaskets: non-asbestos, reinforced Teflon PTFE, ASTM D4894, 1/8-inch-thick, flat ring, ANSI B16.21.
- F. Bolts: AISI Type 304 Stainless Steel, ASTM A193 Grade B8 Class 1, semi-finished heavy hex head, UNC threads.
- G. Nuts: AISI Type 303 Stainless Steel, ASTM A194 Grade 8F, semi-finished heavy hex, UNC threads.
- H. Joint Compound: Teflon PTFE thread seal tape, “Permacel”.
- J. Thermo-wells: Of same manufacturer as, and suitable for Thermometers provided with cap and chain.
- K. Test plug: Peterson Engineering Company, (Pete’s plug) Nibco No 110 or equal Brass-body and Nordel valve core, suitable for 1,000 psig and 275 °F. Coordinate location with balancing firm and as indicated on drawings.
- L. Pressure Gauges: Marsh, Weksler, Ashcroft or equal, Liquid filled, 4 ½” dial with stainless steel case, 1% accuracy, with calibration adjustment for direct pipe mounting. All wetted parts shall be stainless steel. Select pressure ranges to ensure design pressure of system at midpoint of gauge range. Gauge shall be complete with pulsation dampener.
- M. Manual Air Vents: Lunkenheimer, Crane, or equal, ¼” size, bronze, 125 psig (steam) rating minimum with lever handle.
- N. Auto Air Vents: Bell & Gossett No.78 or equal, ¾” size.
- O Valves: See Section 15100 for valve descriptions.

<u>Service</u>	<u>Size (inch)</u>	<u>Number</u>	<u>End Type</u>
<u>Shutoff</u>			

Ball	½" to 2"	V-6175	Socket Weld
Ball	½" to 4"	V-1181	Flanged
Butterfly	2" to 6"	V-6489	Wafer
Plug	½" to 6"	V-6245	Flanged
<u>Control</u>			
Globe	½" to 2"	V-1107	Threaded
Globe	½" to 2"	V-6032	Socket Weld
Globe	2" to 6"	V-1118	Flanged
<u>Check</u>			
Swing	2" to 6"	V-1100	Flanged

- P. Valve Stem Packing (for repacking only): non-asbestos, Teflon PTFE, ASTM D4894, Chevron type, 1/8-inch and greater, John Crane Chemlon, Type C-VH.
- Q. Valve Bonnet Gaskets (for replacement): non-asbestos, reinforced Teflon PTFE, ASTM D4894.

2.2 SOURCE QUALITY CONTROL

- A. Except where specified otherwise, Tests for susceptibility to inter-granular attack per ASTM A262 Practice A (Oxalic Acid Etch Test) and ASTM A262 Practice C (Nitric Acid Test) are not required to be administered.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install piping system per Normal Fluid Service requirements of ASME B31.3 and Section 15050. "Piping Systems"
- B. All Stainless-Steel sleeves and Stainless-Steel piping embedded in concrete shall be wrapped with 3M Scotchrap 51, used in conjunction with Scotchrap primer.
- C. Perform welding activities per Section 18100. "General Welding Requirements".
- D. Identification/Labeling: Section 15074.

3.2 FIELD QUALITY CONTROL

- A. Workmanship of assembly shall be performed as per Section 15073 "Pressure/Leak Testing", Class A procedures.
- B. Weld Examination as per Section 18100 General Welding Requirements.

3.3 CLEANING & DISINFECTION

- A. Cleaning of the relevant under-slab segments of the piping shall be conducted later when the entire piping network is completed as per Section 15072 "Cleaning".
- B. Sterilization of the relevant under-slab segment of the piping shall be conducted when the entire piping network is completed as per Section 15075 "Disinfection".

END OF SECTION 15146